

## **REMARKS**

A Final Office Action was mailed on February 25, 2008. Applicants timely file this Amendment and respectfully request reconsideration of the application.

### **I. Status of the Claims**

Claims 29 - 33 are presently pending, with claims 1 - 28 having previously been canceled. With the present Response, Applicants amend claims 29 - 32. No new matter is introduced. Support for the amendments may be found, for example, in Applicants' published application in the specification at paragraphs [0026], [0050] - [0078], and Figure 6.

### **II. Rejections under 35 U.S.C. § 112, first paragraph (enablement)**

Claims 29 - 33 are rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement. Applicants amend claims 29 - 32 to further clarify the nature of the invention, and respectfully traverse the rejections.

In amended independent claim 29, Applicants have removed the term "evacuation" from the claim. Furthermore, Applicants have amended the claim to recite a "parameter" instead of a judging counter. Amended claim 29 claims a vehicle surroundings monitoring apparatus comprising, among other elements, a:

fifth means for setting a **parameter** ~~judging counter expressing numerically the possibility of evacuation of the preceding vehicle, the judging counter set...~~ [Emphasis added].

As generally known in the field of control systems, a parameter is "a quantity [or] property treated as a constant but which may sometimes vary or be adjusted."<sup>1</sup> In the present invention, the parameter is set as a numerical counter "TIME". The

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<sup>1</sup> "parameter." The Institute of Electrical and Electronics Engineering, Inc., The Authoritative Dictionary of IEEE Standard Terms, Seventh Edition (Kim Breitfelder ed., Don Messina ed., Standards Information Network IEEE Press) (2000).

specification explains that, “the aforesaid judging counter TIME is for expressing the possibility of evacuation of the preceding vehicle numerically.” Paragraph [0053].

Claim 29 further recites that the parameter disclosed above is set:

in response to both a lengthwise and distance (Z) of the preceding vehicle from the own vehicle a widthwise distance (CAL) of the preceding vehicle from the own vehicle has been recognized;

Applicants note the present amendment addresses the grammatical issue set forth by the Examiner on page 3 of the Office Action dated February 25, 2008. With regards to any potential new matter rejection, Applicants contend that the specification provides ample support for the limitation of setting the parameter in response to both a lengthwise and a widthwise distance of the preceding vehicle from the own vehicle. For example, the parameter TIME is set to zero when the lengthwise distance is less than 80 meters and the widthwise distance is less than 500 millimeters.

Further, in case **where it is judged at S305 that the segment kpo of Z coordinate of the preceding vehicle is smaller than 80 meters**, the program goes to S308 in which the judgment counter TIME is initialized according to the position of the preceding vehicle as follows (first evacuation possibility judging means):

A. In case where **CAL is smaller than 500 millimeters**, that is, the preceding vehicle is in the vicinity of the traveling path of the own vehicle (region 1 of FIG. 6),

**TIME=0** [Emphasis added]. Paragraphs [0057] - [0059].

The value kpo is established as depending on the Z coordinate of the preceding vehicle:

The program goes to S206 where **the segment kpo on Z coordinate of the preceding vehicle** is established as follows:

$Kpo = (Z \text{ coordinate of preceding vehicle} - 10.24) / 4.096$   
[Emphasis added]. Paragraphs [0050] - [0051].

As also established, the Z coordinate is “extending in a lengthwise direction of the own vehicle”. Paragraph [0026]. Therefore, the segment kpo represents a lengthwise distance of the preceding vehicle from the own vehicle. It follows that the parameter TIME is at least set in response to a lengthwise distance of the preceding vehicle from the own vehicle.

The value CAL is defined as the difference between the X coordinate of the preceding vehicle and the X coordinate of the own traveling path.

[T]he program goes to S304 where **the absolute value CAL of the difference between X coordinate kpx of the preceding vehicle and X coordinate of the own traveling path C** ( $X_{prc}[i]$ ,  $i=0$  to 23) on Z coordinate of the preceding vehicle, is calculated ( $CAL = |kpx[-]xpx|$ ). [Emphasis added]. Paragraph [0054].

Also, the X coordinate is defined as “extending in a widthwise direction of the own vehicle”. Paragraph [0026]. Therefore, the value CAL represents a widthwise distance of the preceding vehicle from the own vehicle. Accordingly, the parameter TIME is also at least set in response to a widthwise distance of the preceding vehicle from the own vehicle. It follows that the specification provides sufficient support to permit one skilled in the art to set a parameter in response to both a lengthwise and a widthwise distance of a preceding vehicle from the own vehicle.

Further support for the limitation of setting a parameter in response to a lengthwise distance and a widthwise distance can be found in the specification throughout paragraphs [0055] - [0075]. In particular, the parameter TIME is adjusted in response to a range of values for a lengthwise distance defined by the

lengthwise distance kpo and a widthwise distance defined by the value CAL. For instance, when:

the segment kpo of Z coordinate of the preceding vehicle is smaller than 80 meters and larger than 50 meters:

In case of  $2000 \leq \text{CAL} \leq 3000$  millimeters (region II of FIG. 6)  
**TIME=TIME+5** [Emphasis added]. Paragraphs [0061] - [0063].

Additional instances of the parameter TIME being set to a higher value in response to a set of lengthwise and widthwise distances of a preceding vehicle from the own vehicle are described on paragraphs [0066] - [0068] and [0071] - [0073].

The parameter TIME may also be set to a lower value in response to a set lengthwise and widthwise distances between a preceding vehicle from the own vehicle. For example:

[i]n case of other than above (particularly, outside of the region II, note that the preceding vehicle travels around curves)”

**TIME=TIME-5** [Emphasis added]. Paragraphs [0064] - [0065].

Additional examples of the parameter TIME being decreased in response to a set of lengthwise and widthwise distances are explained on paragraphs [0069] - [0070] and [0074] - [0075]. Accordingly, the parameter TIME may further be set to a higher or lower value in response to a lengthwise and widthwise distance of a preceding vehicle from the own vehicle.

In addition, Applicants have amended claim 29 to remove the language: “increasing the judging counter”. Amended claim 29 now recites a:

sixth means for adjusting the parameter ~~increasing the judging counter~~ in a case where any forward traveling object other than the preceding vehicle has been judged [Emphasis added].

The specification discloses that the parameter TIME is adjusted when a forward traveling object other than the preceding vehicle is judged to enter a region around the own vehicle. For example, TIME is increased when an object enters in front or behind a traveling region of the own vehicle. Specifically:

[i]n case where **a forward traveling solid object enters a traveling region kpo+1**, the judging counter TIME initialized by S308 is additionally initialized as follows:

**TIME=TIME+10** [Emphasis added]. Paragraphs [0076] - [0077].

Since the parameter TIME is adjusted in response to a forward traveling object entering a region around the own vehicle, it follows that the specification enables a means for adjusting a parameter in a case where any forward traveling object other than the preceding vehicle has been judged.

Pending claims 30 - 32 have also been amended similarly to claim 29 and now recite a “parameter” instead of a “judging counter”.

In response to the Examiner’s contention that the “eighth means for judging that the preceding vehicle is NOT traveling in front of the travel path of the own vehicle...” is not enabled, Applicants respectfully disagree. In particular, the Examiner states that the “timer is presumably increased indicating how long a vehicle [is] in a path in front of a preceding vehicle.” To the contrary, the timer is a positive indicator that a preceding vehicle is evacuating the travel path of the own vehicle. As described in the specification, the present invention provides means for evaluating “behaviors of the preceding vehicle such as **evacuation of a preceding vehicle from a traveling path of an own vehicle**”. [Emphasis added]. Paragraph [0007]. In other words, evacuating is the act of a preceding vehicle leaving the traveling path of an own vehicle (i.e., changing lanes from the own vehicle lane). Step S308 merely states, “[e]stablish TIME according to position of preceding vehicle.” The specification provides the particular mechanisms for establishing the

parameter TIME. The passages below explain how the parameter TIME is increased when the system receives indications that the preceding vehicle is in a position that would indicate evacuation.

As recited in the specification:

[i]n this embodiment, the signal is the same as a signal indicating that there is a possibility of evacuation of the preceding vehicle. Further, **the aforesaid judging counter TIME is for expressing the possibility of evacuation of the preceding vehicle numerically.** [Emphasis added]. Paragraph [0053].

For example, the parameter TIME is set to zero when there is no possibility of a preceding vehicle that is evacuating. For example, when the preceding vehicle is judged to either not exist, or be so far ahead that any possibility of evacuation is not significant, TIME is cleared.

In this routine, first, at S 301, **it is judged whether or not a preceding vehicle exists. If there is no preceding [vehicle],** the program goes to S302 wherein **a judging counter TIME is cleared (TIME=0)** and then goes to S303 wherein it is judged that there is no preceding vehicle and such a signal is outputted, leaving the routine. [Emphasis added]. Paragraph [0053].

First, at S 305, **it is judged whether or not the segment kpo of Z coordinate of the preceding vehicle is larger than 17. that is, the division is more than 80 meters ahead.** If kpo is larger than 17, the program goes to S 306 in which **the judging counter TIME is cleared (TIME=0)** and then goes to S307 **a signal indicative of no possibility of evacuation of the preceding vehicle is outputted,** leaving the routine. [Emphasis added]. Paragraph [0056].

Furthermore, the parameter TIME is increased when the preceding vehicle is judged to be in a region potentially indicating evacuation. Examples are disclosed in paragraphs [0060] - [0063], [0066] - [0068] and [0071] - [0073] wherein the

preceding vehicle is judged to be in a region (e.g., region II, III or IV) of potential evacuation.

In light of the amendments and remarks above, Applicants contend that pending claim 29 is described in such a way as to enable one skilled in the art to make and/or use the invention and is therefore in condition for allowance.

Claims 30 and 33 only stand rejected for depending on independent claim 29. Applicants contend that since claim 29 enables one skilled in the art to make and/or use the invention, that claims 30 and 33 also now also enabling. Accordingly, Applicants submit that claims 30 and 33 are now in condition for allowance.

Furthermore, claim 32 has been amended in accordance with claim 29 and is also now enabling.

Claim 31 stands further rejected for failing the enablement requirement since the claim recites "a vehicle evacuation region". Amended claim 31 now recites:

[t]he vehicle surroundings monitoring apparatus according to claim 29, wherein the parameter judging counter is set to increase when the preceding vehicle is in a vehicle evacuation region comprising an area of a predetermined width and length around the travel path of the own vehicle which is established in predetermined left and right areas around the travel path of the own vehicle at a plurality of distance divisions ahead of the own vehicle. [Emphasis added].

Support for this amendment is found in paragraphs [0057] - [0075], and Figure 6. As introduced above, the specification describes regions of predetermined width and length as set forth in paragraphs [0057] - [0062], [0066] - [0067], [0071] - [0072]. For example, region III is presented as an area with height defined by a range of kpo values and a width defined by a range of CAL values.

(2) In case where the segment kpo of Z coordinate of the preceding vehicle is smaller than 50 meters and larger than 30 meters:

In case of  $1500 \leq \text{CAL} \leq 2500$  millimeters (region III of FIG. 6)  
Paragraphs [0066] - [0067].

In other words, region III is bound by kpo values between 30 to 50 meters, and CAL values between 1500 and 2500 millimeters. Similarly, paragraphs [0061] - [0062] define a region bound by kpo values between 50 to 80 meters, and CAL values between 2000 and 3000 millimeters, and paragraphs [0071] - [0072] define a region bound by kpo values between 0 to 30 meters, and CAL values greater than 1000 millimeters. When the preceding vehicle is judged to be in one of the pre-defined regions, the parameter TIME is increased as evidenced in paragraphs [0063], [0068], and [0073].

In view of the amendment and remarks above, Applicants submit that amended claim 31 meets the enablement requirement.

### III. **Rejections under 35 U.S.C. § 112, first paragraph (written description)**

Claims 31 and 32 stand rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. Applicants contend that the present amendment to claim 31 removes the language that the Examiner objected to as unsupported (“a vehicle evacuation region”). The amended claim now recites:

~~a vehicle evacuation region~~ **comprising an area of a predetermined width and length around the travel path of the own vehicle** ~~which is established in predetermined left and right areas around the travel path of the own vehicle at a plurality of distance divisions ahead of the own vehicle.~~  
[Emphasis added].

As previously discussed, the parameter TIME is increased when the preceding vehicle is in a region comprising an area of predetermined width and length as described in paragraphs [0057] - [0075].

Accordingly, Applicants contend that claim 31 describes in a way as to reasonably convey to one skilled in the relevant art that the inventor had possession of the claimed invention at the time of filing.

Claim 32 recites:

The vehicle surroundings monitoring apparatus according to claim 31, wherein **the parameter is set to increase as the preceding vehicle approaches the own vehicle region** the distance divisions comprise a first division near the own vehicle, a second division in front of the first division and a third division in front of the second division. [Emphasis added].

The parameter TIME is increased as the preceding vehicle gets closer to the own vehicle. As described in paragraphs [0060] - [0073], the present invention provides three distinct regions (i.e., regions II - IV) for assessing the proximity of the preceding vehicle from the own vehicle. When the preceding vehicle is in region IV, the region closest to the own vehicle, the parameter TIME is increased the most.

In case of  $CAL \geq 1000$  millimetres (**region IV** of FIG. 6)

**TIME=TIME+30** [Emphasis added]. Paragraphs [0072] - [0073].

When the preceding vehicle is in region II, the region farthest from the own vehicle, the parameter TIME is increased the least.

In case of  $2000 \leq CAL \leq 3000$  millimeters (**region II** of FIG. 6)

**TIME=TIME+5** [Emphasis added]. Paragraph [0062] - [0063].

When the preceding vehicle is in region III, the region in between region II and region IV, the parameter TIME is increased by a value in between 5 and 30. (*see* Paragraphs [0067] - [0068]). Accordingly, Applicants submit that claim 32 meets the written description requirement.

IV. **Rejections under 35 U.S.C. § 112, second paragraph (indefinite)**

Claims 31 and 32 also stand rejected under 35 U.S.C. § 112, second paragraph, as failing to particularly point out and distinctly claim the subject matter regarding the claimed invention. Applicants contend that the present amendment to claim 31 removes the language that the Examiner objected to as indefinite (“a vehicle evacuation region”). As discussed above, amended claim 31 now recites a region comprising an area of a predetermined width and length around the travel path of the own vehicle. For example, Figure 6 illustrates the areas of predetermined width and length as indicated by regions II - IV.

Therefore, Applicants contend that claim 31 particularly points out and distinctly claims the subject matter regarding the claimed invention and is now in condition for allowance. Claim 32 has been amended in accordance with amended claim 31 and Applicants contend that claim 32 is also now in condition for allowance.

**CONCLUSION**

In view of the foregoing, Applicants believe the pending application is in condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue.

The Examiner is respectfully requested to contact the undersigned at the telephone number indicated below once he has reviewed the proposed amendment if the Examiner believes any issue can be resolved through either a Supplemental Response or an Examiner's Amendment.

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Respectfully submitted,

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